

Claims

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. A trencher unit for mounting to the attachment fitting of a loader of the type
5 having arms for vertical motion and the attachment fitting pivotably mounted to the arms for pivoting movement and controls for moving the arms up and down and pivoting the attachment fitting to thereby control the vertical position and orientation of the attachment fitting, the trencher unit comprising:

- (a) an attachment assembly for mounting to the attachment fitting of the loader,
- 10 (b) a digging chain support frame having a proximate end and a distal end and fixed at the proximate end thereof to the attachment assembly,
- (c) a chain drive sprocket rotatably mounted to the digging chain support frame toward the proximate end thereof,
- (d) an idler wheel rotatably mounted to the digging chain support frame at the distal
15 end thereof,
- (e) an endless digging chain looping around the drive sprocket and the idler wheel for excavating soil to make a trench,
- (f) a chain drive motor mounted to the digging chain support frame for turning the drive sprocket and the digging chain, and,
- 20 (e) an auger assembly adjustably mounted to the digging chain support frame between the drive sprocket and the idler wheel for adjustment between an upper position and a lower position, the upper position and the lower position

corresponding to a range of trench depths, the auger assembly including at least one auger drive sprocket for engaging the digging chain and at least one auger coupled to the at least one auger drive sprocket for pushing soil away from the trench as the trench is excavated,

5 whereby an operator may control the vertical position and orientation of the trencher unit and bring the digging chain of the trencher unit into penetrating and digging contact with an earthen surface such that a trench may be excavated as the loader moves over the earthen surface as the auger of the auger assembly having been adjusted to a position corresponding to a desired trench depth pushes
10 excavated soil away from the trench.

2. The trencher unit of claim 1, wherein:

 the auger assembly includes at least two auger drive sprockets fixed to transverse auger shafts, the auger shafts rotatably mounted to the auger assembly
15 and extending from both sides thereof, the auger drive sprockets engaging the digging chain on either side of the support frame and wherein each auger shaft is adapted for receiving an auger on both sides of the auger assembly.

3. The trencher unit of claim 1, wherein:

20 the auger assembly includes at least two auger drive sprockets fixed to transverse auger shafts, the auger shafts rotatably mounted to the auger assembly and extending from both sides thereof, the auger drive sprockets engaging the

digging chain on either side of the support frame and wherein each auger shaft is adapted for receiving an auger on both sides of the auger assembly,

each auger may be adjustably mounted to each auger shaft between a closely spaced position and a widely spaced position.

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4. The trencher unit of claim 1, wherein,

the digging chain support frame includes a sleeve member and a telescoping support member for carrying the idler wheel, the telescoping support member received by the sleeve member for adjustable movement of the telescoping support member and the idler wheel in relation to the chain drive sprocket between a first retracted position and a second extended position.

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5. The trencher unit of claim 1, further comprising,

a skid plate assembly mounted to the front of the digging chain support frame including a skid arm and a skid plate for contacting the ground in front of the digging chain support frame to limit undesired forward pivoting movement thereof.

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6. The trencher unit of claim 1, further comprising,

an adjustable brace assembly mounted behind the digging chain support frame including an extendible brace arm for providing a brace between digging chain support frame and the loader to limit pivoting movement of the digging chain support frame.

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7. The trencher unit of claim 1, further comprising,

(a) a skid plate assembly mounted to the front of the digging chain support frame including a skid arm and a skid plate for contacting the ground in front of the digging chain support frame to limit undesired forward pivoting movement thereof, and,

(b) an adjustable brace assembly mounted behind the digging chain support frame including an extendible brace arm for providing a brace between digging chain support frame and the loader to limit pivoting movement of the digging chain support frame.

8. A trencher unit for mounting to the attachment fitting of a loader of the type having arms for vertical motion and the attachment fitting pivotably mounted to the arms for pivoting movement and controls for moving the arms up and down and pivoting the attachment fitting to thereby control the vertical position and orientation of the attachment fitting, the trencher unit comprising:

(a) an attachment assembly for mounting to the attachment fitting of the loader,
(b) a digging chain support frame including a housing and a digging chain support assembly mounted to the housing, the digging chain support assembly including a sleeve member and a telescoping support member which is received by the sleeve member,

(c) an idler wheel assembly including a rotatably mounted idler wheel mounted to the lower end of the telescoping support member and an adjustment mechanism for pushing the idler wheel assembly away from the sleeve member,

(c) a chain drive sprocket fixed to a chain drive shaft, the chain drive shaft rotatably mounted to the housing,

(d) a chain drive motor mechanically coupling the housing and the chain drive shaft for powering the chain drive sprocket,

(e) an endless digging looping around the drive sprocket and the idler wheel for excavating soil to make a trench, and,

(e) an auger assembly adjustably mounted to the digging chain support assembly between the drive sprocket and the idler wheel assembly for adjustment between an upper position and a lower position, the upper position and the lower position corresponding to a range of trench depths, the auger assembly including first and second spaced auger drive sprockets for engaging the digging chain, the first auger drive sprocket disposed forward of the digging chain support assembly, the second auger drive sprocket disposed behind the digging chain support assembly, the auger drive sprockets fixed to auger shafts transversely and rotatably mounted to the auger assembly, the auger shafts for adjustably receiving the augers, the augers adapted for pushing soil away from a trench as a trench is excavated,

whereby an operator may control the vertical position and orientation of the trencher unit and bring the digging chain of the trencher unit into penetrating and digging contact with an earthen work surface such that a trench may be excavated

as the loader moves over the earthen surface as the augers of the auger assembly having been adjusted to a position corresponding to a desired trench depth push excavated soil across the earthen work surface and away from the trench.

5 9. The trencher unit of claim 8, wherein:

 each auger may be adjustably mounted to each auger shaft between a narrowly spaced position and a widely spaced position.

 10. The trencher unit of claim 8, wherein,

10 the digging chain support assembly further comprises an end member received at the end of the sleeve member and at least one extension member which is interposed between the sleeve member and the end member in order to increase the length of the digging chain support assembly and wherein the adjustment mechanism is connected between the end member and the idler wheel assembly,
15 and the telescoping support member is received by the sleeve member, the end member and the at least one extension member.

 11. The trencher unit of claim 8, further comprising,

 a skid plate assembly mounted to the front of the digging chain support
20 frame including a skid arm and a skid plate for contacting the ground in front of the digging chain support frame to limit undesired forward pivoting movement thereof.

12. The trencher unit of claim 8, further comprising,

an adjustable brace assembly mounted behind the digging chain support frame including an extendible brace arm for providing a brace between digging chain support frame and the loader to limit pivoting movement of the digging chain support frame.

13. The trencher unit of claim 8, further comprising,

(a) a skid plate assembly mounted to the front of the digging chain support frame including a skid arm and a skid plate for contacting the ground in front of the digging chain support frame to limit undesired forward pivoting movement thereof, and,

(b) an adjustable brace assembly mounted behind the digging chain support frame including an extendible brace arm for providing a brace between digging chain support frame and the loader to limit pivoting movement of the digging chain support frame.

14. The trencher unit of claim 8, wherein,

the digging chain support assembly further comprises an end member received the sleeve member and at least one extension member which is interposed between the sleeve member and the end member in order to increase the length of the digging chain support assembly and wherein the adjustment mechanism is connected between the end member and the idler wheel assembly, and the

telescoping support member is received by the sleeve member, the end member and the at least one extension member,

a skid plate assembly is mounted to the front of the digging chain support frame including a skid arm and a skid plate for contacting the ground in front of the digging chain support frame to limit undesired forward pivoting movement thereof, and,

an adjustable brace assembly is mounted behind the digging chain support frame including an extendible brace arm for providing a brace between digging chain support frame and the loader to limit pivoting movement of the digging chain support frame.